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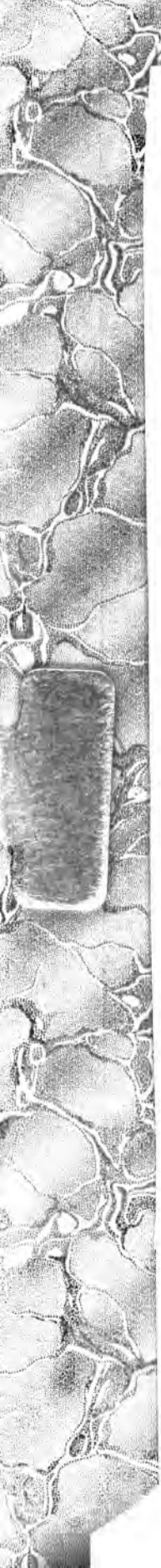

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THE

MEXICAN SOUTHERN RAILWAY,

TO BE CONSTRUCTED UNDER A CHARTER

FROM

THE MEXICAN GOVERNMENT,

THROUGH THE STATES OF

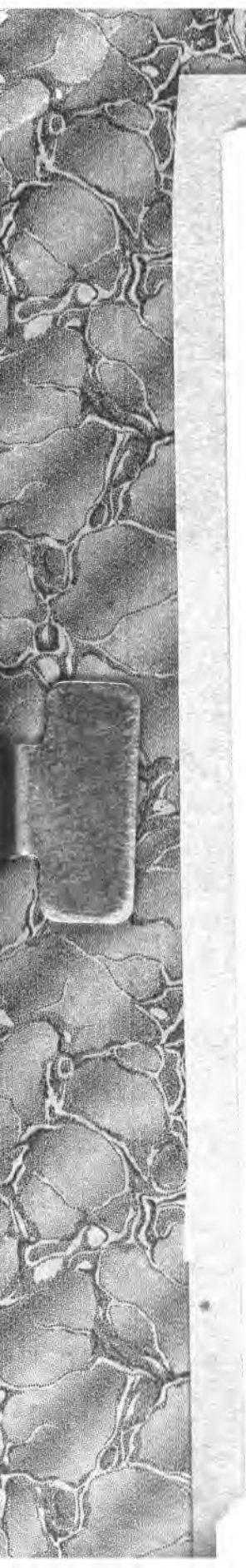
VERA CRUZ AND OAXACA.

BY

ROBERT B. GORSUCH,
Engineer.

HOSFORD & SONS,
STATIONERS AND PRINTERS,
NEW YORK.

1881.



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THE

MEXICAN SOUTHERN

RAILWAY.

When the railroad connections from the Rio Grande to the City of Mexico shall have been completed, which may reasonably be hoped will be within the time specified in their respective charters, the system of railways of the United States will not yet be in communication with the best and richest portion of the Mexican Republic.

Southern Mexico, by which is meant that portion of the Republic lying in a south-easterly direction from the Federal Capital, and extending from ocean to ocean, possesses in a more marked degree than any other section of the country, the natural elements making it a specially promising field for railway enterprise.

THE AMERICAN RAILWAY SYSTEM

which in its ultimate extension must eventually reach southwardly even into Central and South America, has in its course, inevitably, to pass through the State of Oaxaca, (pronounced Wah-hah-kah, accented on second syllable,) and the road here under consideration will then form a very important link in this great intercontinental line, which a little further south is forced to the narrow strip of territory forming the Isthmus of Tehuantepec.

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THE SUCCESSIVE ZONES

of climatic variation, which throughout all Mexico follow each other in quick succession within very limited distances more the result of changing altitudes above the level of the sea, rather than of difference of latitude, are in the portion of the country we are alluding to, brought even nearer together than anywhere else within the Republic.

The products of the soil are consequently much more varied within a given area, than where these topographical features do not exist, and therefore more easily interchanged, probably, than anywhere else on the globe, and this may in a great degree account for the fact that the State of Oaxaca, which embraces a considerable portion of the territory under consideration, contains more population to the square mile than any of her less favored sister states, except the smaller central ones, where it has been drawn together by the centralizing influences of the Federal District, and other causes which it is not necessary to discuss here, whereas, in Oaxaca, the only inducement or attraction to population has been its benignant climate and productive soil, combined with the comparatively easy interchange of products and commodities, notwithstanding the great want of improved ways of communication, and which has made labor in the agricultural districts more remunerative than in most other portions of the country.

IN POPULATION

the State of Oaxaca, since the earliest historical records, has been one of the leading ones of that entire region, and the immense and wonderful ruins within her borders are evidences beyond the possibility of refutation, that since ages in the past, she has held this supremacy. The Mitla Ruins, twenty-five to thirty miles south east from the City of Oaxaca are among the most extensive.

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The official returns of the census of 1879 as given among the Executive documents, presented by the Governor of the State to the Legislature at the opening of Congress in September of that year, gives it a population of 744,807 souls, being an increase over the estimated population made the previous year of 7,425 souls.

These figures, although official, are known and admitted to be much below the real facts in the case, for the following reasons: the Indian, always retiring in his nature, except when he rises to leadership, and ever fearing in the past the customary drafts for military service and exaction of personal taxes, hides from observation whenever possible, and the State of Oaxaca, by her broken, yet very productive surface, offers greater facilities for evading public scrutiny than any other state of the Federation. Another reason that the apparent population falls below the actual, is that within the last few years, since the opening of the Vera Cruz Railroad, and the consequent development of the country along its route, the price of day labor there has risen and attracted many hands from Oaxaca in all the departments of industry, who upon the development of a more remunerative labor at home would immediately and very gladly return to their native state, for the Mexican Indian is not migratory by nature but on the contrary wedded, to the extreme, to his place of birth.

The population of the State may safely be put down at very near if not quite 1,000,000 of vigorous, laborious, frugal and honest people, and having an area of 27,470 square miles results in a fraction of over 36 to the square mile, which is greater than that contained by any other State of the Federation, except the most central ones as before stated, and will compare favorably with many of the Western and Southern States of this Republic.

THE ABUNDANT RAIN FALL

is still another very important consideration to be mention in this connection. As we go South on this portion of t continent, the rain fall increases and is more evenly d tributed, both as to extent of area on which it descends, a the periods of time during which it may be relied upon, th in any of the more northerly states of the republic, and th leads naturally to the statement of another very importa fact growing out of that already presented, namely: Th Oaxaca has a greater number of constantly flowing wat courses, suitable for irrigation and for motive power, than found in other states: which, with railroad facilities adde to the many advantages she already possesses, must plac her in the front rank.

THE PRODUCTS OF THE SOIL

in this favored state of Oaxaca, as also in immediately adjoi ing states, are simply marvelous. From the sea level unde a tropical sun, which is the condition of the coasts in this lat tude, to the upper mountain slopes, ten thousand feet abov following step by step in close and quick succession, is foun growing luxuriantly, coffee, sugar, cotton, tobacco, vanilla cochineal, indigo, cocoa, rice, dye woods, as well as all th fine cabinet woods; the India rubber tree, vegetable dyes "chile" or red and green peppers, bananas, oranges, lemon and all the small tropical fruits, many of which are unknow in this country; and, as we ascend, we find corn, wheat, bar ley, and the fruits of the temperate zones, while higher up are the pines, oaks and other timber for construction.

I might allude in detail to all these agricultural products but it is scarcely necessary at this time, yet to

COFFEE, SUGAR AND COCHINEAL

I must give some further notice.

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Hon. John W. Foster, late U. S. Minister at Mexico, in an elaborate review of Mexican coffee, published by the U. S. Department of Agriculture in 1876, said its quality was "equal to the best known in any country," and that Mexico in coffee alone "possesses a far greater source of wealth and prosperity" than in her products of silver, which averages about $26,000,000 annually.

To appreciate what may be reasonably expected from affording railway facilities to the State of Oaxaca, I will here state what has been the result in the adjoining State of Vera Cruz in the production of coffee alone.

During the year 1869 there was exported from the port of Vera Cruz only $671 worth of coffee to this market.

In 1875, after the effect of the construction of the Vera Cruz and City of Mexico railway had begun to be felt, the exportation had increased to about $600,000, and for the fiscal year ending 30th of September last, the returns from the U. S. Consulate at the City of Vera Cruz showed the exportation for that year to have been $1,548,449.81, Invoice value.

Senor Matias Romero, who has paid special attention to the cultivation of coffee, states that, when the selection of a location for a plantation is made judiciously, and the work carried on intelligently and economically, the profits realized may be safely put at one hundred per cent. per annum upon the investment, covering all cost of land, necessary buildings, plants and attendance, gathering and preparation for shipment.

Sugar Cane flourishes luxuriantly in every portion of Southern and Central Mexico at the altitude suited to its production, and so well adapted is the climate to its full development that, in many districts, one planting will yield an abundant crop for four or five consecutive years, and may

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generally abound in fine fish, which in some portions of the State is the chief food of the people. Game is plentiful in kind, according to the climate of the locality determined by altitude.

THE RAILROAD QUESTION,

for Mexico, is one of most vital interest, and I must here impress upon the reader the very important fact that she has no large interior rivers, and very few that are navigable, even a short distance from the sea, or that may be made so at any cost within the limits of a sound investment. Under appointments from the Federal Government of the Republic the writer has examined and reported upon several of the most important rivers upon either coast, and therefore speaks from positive personal knowledge.

Mexico has not the number of harbors in proportion to her length of coast line that we have here in the United States, but she has several, both on the Gulf and the Pacific, that are all that the requirements of a large mercantile marine demands, and among them are those that lie at the termini of this proposed road, as authorized under its charter.

When Hernando Cortez, the conqueror of Mexico, destroyed his fleet to prevent the spirit of discontent among his followers from being constantly fed by the hope of escape from the country and an early return to Cuba, and thence to Spain, he selected the site of the City of Vera Cruz, the present chief port of entry on the Gulf Coast as the best for his purpose, for the very reason that it was the most inaccessible point on the coast, and therefore the most easily defended from an attack by sea, and this point, suited only for the position of a fortress, has, as stated above, become the chief port of the Republic. The point at which Cortez landed is still known as "Old Vera Cruz," and lies a short distance up the coast.

When Vera Cruz was but an insignificant town of a few wooden buildings; when the foundation walls for the fortress of Ulua were not yet completed, the local authorities of the place petitioned the king of Spain to permit the abandonment of the site and the removal of the port to Anton Lizardo. The influence of the governing Viceroy of New Spain, as Mexico was then called, which was used against the proposed change, resulted in the refusal of the king to grant the petition.

The city then offered to repay to the Crown the cost of all the Government works that had been constructed, which, as native convict labor had been used, and which labor had to be kept constantly employed, had really caused little expenditure beyond the ordinary maintenance of the working forces. Finally the proffered indemnity was fixed at $100,000, which, it is stated was a very prodigal offer for the works that would have been abandoned; but the proposition was refused, and the Fortress City remained.

One of the most practical indications of the improved political condition of Mexico and the acceptance of a peace policy, is that this last year the walls and bastions that surrounded Vera Cruz on the land side, and completely hemmed it in, were all thrown down, to allow for the extension of commerce which has been clamoring for more room.

When, as the pioneer in railway construction in Mexico, in 1856, I studied and reported upon the then proposed railroad from Vera Cruz to the Capital, I saw and stated clearly that as soon as the commerce of the country developed to a degree, that it must some day reach,

ANTON LIZARDO

must, of necessity, become the Gulf port. Up to this time the interests of the City of Vera Cruz have prevented it, not-

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withstanding it offers all that is desirable for the purpose; it is easy of access and egress even under the heaviest weather, is ample in extent, has depth of water to admit the largest vessels, also good bottom for a secure anchorage, and is protected seaward by islands and reefs that, while so distant from the main land as not to prejudicially limit the harbor in the least degree, are a perfect protection to it.

That expensive improvements will have to be made is a matter of course, light-houses must be erected, and it may be found advantageous to destroy some minor obstructions to the entrance of the harbor. Channels already existing may have to be improved, and proper signals placed where required.

Suitable piers and wharfs will, of course, have to be provided, but with the late improvements in the construction of iron piers and the sinking of piles by the "water-jet system," the cost of the substructure for these important works of improvement is reduced to the minimum and carried on with a rapidity that a few years ago was impossible with the then known appliances. That the harbor of

VERA CRUZ

may be temporarily improved, I do not deny, but all expenditures made for this purpose will ultimately be lost, as the first requisites for a permanent port do not exist there, and the sooner this fact is accepted and acted upon, the better it will be for the nation. That present property holders there, including the Federal Government, must suffer pecuniary loss is admitted, but it is the result of ignorance and error in the past, and, sooner or later, must be felt to the fullest extent.

By taking immediate action, now that a new era of commercial activity and industrial development is opening in

Mexico, both government and people will suffer little loss compared with what will have to be borne at some later day not far distant. Delay in deciding this important question, and in accepting the course indicated, can but result in greater sacrifices eventually.

HUATULCO

On the Pacific, is the only natural port on the Mexican coast, south of Acapulco; Ventosa and Puerto Angel, are sometimes referred to as such, but the former is merely an open roadstead, available only during the season of the year when calms prevail, and the latter, although safe at all times, is so limited in extent as to be of no practical value as a commercial center and utterly inadequate to meet the demands of a railway terminus.

THE TEHUANTEPEC RAILROAD COMPANY

were authorized, under their charter, to make the southern terminus of their road on the northerly shore of "Laguna Superior," to open a proper channel across that lake, and deepen and maintain a suitable outlet from it into the sea, but the company, on the 6th of November of last year, obtained an amendment to their charter allowing them to make the Pacific terminus of their road outside of the lake, indicating that examinations have shown the extreme difficulty, if not the impracticability, of opening and maintaining an artificial channel on the coast, and that this project has been abandoned. It may reasonably be expected, therefore, that the port of Huatulco will reap much advantage from the intended connection with the Tehuantepec as well as from the Oaxaca Railroad. The Port is fifty five miles in a southwesterly direction from the City of Tehuantepec

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which contains about 15,000 inhabitants. Some years ago Huatulco was established a port of entry, but upon clearing the heavy growth of vegetation that surrounds it, bilious fevers became prevalent, and as the causes producing them were not as well understood then as now, it was supposed to be unhealthy and the Custom House was removed to Puerto Angel.

The port of Huatulco, it may be said, lies upon the same meridian of longitude as does Anton Lizardo: 3° 10′ east from the City of Mexico, the difference being only a few minutes; it is, therefore, due south from the Gulf port and the distance between them, in an air line, is two hundred and thirty-five English miles, and within the zone comprised between 15° 50′, and 19° 3′ north latitude.

THE CORDILLERA

or mountain chain of the Andes, which to the south falls away and narrows to the remarkable degree seen at the Isthmus of Tehuantepec, and to the north forms the broad plateau or table land of Mexico at an altitude ordinarily of from 6,500 to 7,500 feet above the level of the sea; in the State of Oaxaca is comparatively contracted in width, the mountain peaks rising from it are generally nearer together, and the valleys, as they are termed, or the portions of the table land between the bases of these peaks, are consequently not so large in extent as farther north; but, as before stated, they are better watered and more productive. The mountain chain here, as throughout the other portions of the range, lies nearer the Pacific than the Atlantic coast.

Another interesting feature in this connection, with reference to railroad construction, is that the sources of the rivers flowing towards either coast rise very near each other

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on this proposed route, making the whole distance from the summit on either side available for securing, approximately, uniform grades within reasonable limits.

Having made these preliminary statements I will now proceed with the general description of the route proposed for the projected railway, with some detail concerning it, followed by sufficient data on other points to give a fair understanding of the enterprise as viewed from a financial and commercial standpoint; simply premising that among the many railroads that have been proposed, and for which charters have been granted during the enlightened administration of President Porfirio Diaz, whose term of office expired only on the 30th day of November last, none will bear a closer investigation as to probable results, and none promise more inviting inducements to capitalists than this projected southern railway of Mexico.

THE CHARTER

for the Oaxaca railroad and branches was granted on the 25th of August last, by the Federal Executive, through the Department of Public Works, to the Governor of the State of Oaxaca, with full power to organize a company or companies to carry out the provisions of the charter; and the Governor did on the ninth day of September last, execute a full and ample power of Attorney in favor of Senor Matias Romero, a native of the State of Oaxaca, and so well known in this country from the high official positions he has held both at home and abroad, empowering him to organize such company or companies, and to transfer the said charter to such party or parties as he might select for the purpose.

I do not propose to give any detail of the charter further than to describe the route, as the proper place for this will

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be in connection with the publication of the charter under which the Company here in the United States will be organized for carrying out the provisions of the grant.

THE ROUTE WILL BE

from Anton Lizardo on the Gulf Coast, sixteen miles southeast of the City of Vera Cruz, thence following a generally southerly direction through the States of Vera Cruz and Oaxaca to the Port of Huatulco on the Pacific Ocean.

In addition to the trunk line, the charter also provides for the construction of two very important branches, the first to connect in a north-westerly direction with the City of Tehuacan, in the adjoining State of Puebla, to which the Federal Government has already constructed and which is now in operation, a standard gauge road connecting that city with the station of Esperanza on the Vera Cruz and City of Mexico Railway.

This branch of the Oaxaca road to Tehuacan will therefore put the trunk line at once in an all-rail communication with the capital of the Republic.

The other branch, authorized under the charter, is that from Huatulco, the Pacific port, "down" the coast, which here runs a little north of east, to connect with the Tehuantepec Railroad now being constructed across the Isthmus.

These Tehuacan and Tehuantepec branches, as we must now call them to be in harmony with the provisions of the charter, together with the greater portion of the present trunk line, will, when the through connections from north to south shall be completed, form the important link in the great Intercontinental Railway system, as stated in the beginning of this paper.

There is still another important connection which this Oaxaca road will have, which is through the road already

being constructed on the Gulf Coast under a separate charter, and to which I will again allude in another place.

THE CITY OF OAXACA,

the capital of the State within which most of the proposed road will lie, is fifty-three miles west from the meridian, or north and south line before stated as passing through the termini of the road, Anton Lizardo and Huatulco, and is distant in a direct line 145 miles from the former or Gulf port, and 105 miles from the latter or Pacific port.

The road will pass through or very near the city, which contains about 28,000 inhabitants, and is beautifully situated in one of the valleys mentioned as forming the lower level of the central plateau, and which may be termed a gap, although much wider in extent than is usually understood by this term. From a point near the City of Oaxaca water flows towards either ocean, and the valleys through which these rivers descend, or the slopes rising from them, will be the route on which this proposed road must be built. This applies strictly to the line towards the Gulf. On the Pacific side the route will follow, for some miles, the valley of the river that rises near the City of Oaxaca, and will then cross the spurs or secondary ridges which separate it from the sources of a stream that empties to the east of Huatulco, down which stream the line will probably follow until near the coast. Several

OTHER CITIES AND TOWNS

with a population of from two to six thousand each, are directly upon the line of this route, and still others will be tributary to the road.

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THE SUMMIT LEVEL.

of the proposed road may therefore be assumed to be at the height of the City of Oaxaca which has been determined, barometrically, to be 5,045 feet above the sea, and as, for the reasons already stated, the descent may be expected to be easier than is usual in mountainous countries, that is more uniform, the distances to either port lead to the reasonable expectation that excessive gradients will not have to be resorted to, still they will, of necessity, be heavier than is usual here in the United States, and American engineers and railway managers, except those who have already had experience on our heaviest lines, may feel doubtful as to the practicability of this road, viewed as a business enterprise.

THE LENGTH OF ROAD

to be constructed over the proposed route, although the line has not been surveyed, based upon the well-known topographical features of the country, will be about 380 miles of trunk line, 230 of which distance will be from Anton Lizardo to the City of Oaxaca, and 150 miles thence to Huatulco, which distance is ample to meet the required deflection from a direct course, and for the development of the line where necessary for the maintainance of generally uniform grades, which I believe may be obtained from the foot hills at the inland edge of the coast plains, and which on the line the road will follow are, on the Gulf side, about 55 miles in width, and on the Pacific side so narrow as to be scarcely worthy of notice.

THE TEHUACAN BRANCH,

which will leave the trunk line about half way between the port of Anton Lizardo and the City of Oaxaca, and will form,

as before explained, a link in the connection with the City of Mexico, will be 65 miles long, and the

PACIFIC BRANCH,

which as before stated will be a coast line to connect with the Tehuantepec Railroad, will be about 60 miles, making 125 miles of branch lines, and a

TOTAL LENGTH

of trunk line and branches of 505 miles.

THE OTHER IMPORTANT BRANCH,

or rather connection on the Gulf coast, to which I have before alluded, is that now being constructed under a charter granted on the 26th of March, 1878, and is to extend from Vera Cruz down the coast to Alvarado, near the mouth of the river Papaloapan.

This charter also provides for the construction of a railroad from the upper waters of the river San Juan, a tributary of the Papaloapan, to the City of Minatitlan, near the mouth of the Coatzacoalcos river, and the chief city on the Gulf side of the Isthmus of Tehuantepec.

The road from Vera Cruz to Alvarado will be of some importance to the Oaxaca Road, as it crosses it near Anton Lizardo, but the most important connection will be made by the construction of a branch farther south to connect with the eastern division of the coast road, or that between the river San Juan and Minatitlan, thus making an all-rail connection with the Tehuantepec Road.

It is probable an equitable arrangement may be made for securing this route, which if done will make an ADDITIONAL LENGTH of branch line of 120 miles, through a well populated and productive country.

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THE COST OF CONSTRUCTION

and equipment for a standard gauge road, may be safely estimated at an average of $30,000 per mile, which will result as follows:

380	miles	main line,	$11,400,000
65	"	Tehuacan Branch,	1,950,000
60	"	Pacific "	1,800,000
505	"	With total cost of	$15,150,000

It would be presumption to pretend to estimate the returns that may be expected from this road, from the limited data in my possession, but to show the effect of railway construction in Mexico upon the development of trade, and that the rules applicable in this and other countries serve as a basis for calculation even there, I will give an extract from the last annual report of the Board of Directors of

THE VERA CRUZ RAILROAD,

(Mexican Railway Company), presented at the annual meeting of the shareholders held in the City of London, England, on the 29th of July of last year, as follows:

Receipts	for 1876,	$2,175,000
"	" 1877,	2,700,000
"	" 1878,	2,895,000
"	" 1879,	3,512,000
"	for 5 months of 1880,	1,512,00

Supposing that for the remaining seven months of last year the returns have been in the same proportion it will give for the year 1880, $3,628,000, which is the largest amount that has been received.

The Vera Cruz Railway and Puebla Branch are, together, 292 miles long; the cost of construction was, for various reasons, excessive, yet its bonds and preference stock are at a premium on the market to-day.

With the conviction that the Oaxaca Railroad and its connections will be one of the best investments in Mexico, I trust that capitalists will find it to their interest to push it to an early completion.

ROBERT B. GORSUCH,

Engineer,

City of Mexico.

FIFTH AVENUE HOTEL,

New York, January, 1881.

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